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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,215

06/08/2006

Robert Greiner

4001-1220

3850

466

7590

04/09/2008

YOUNG & THOMPSON

209 Madison Street

Suite 500

ALEXANDRIA, VA 22314

EXAMINER

KHATRI, PRASHANT J

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

04/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,215	Applicant(s) GREINER ET AL.	
	Examiner PRASHANT J. KHATRI	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/8/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 11 recites the limitation "the metal alloy" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.
3. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The scope of the claim is confusing given that independent claim 9 discloses a "fiber network" and dependent claim 13 discloses a "particle shaped" material. It is unclear as to how a "particle shaped" material would form a fiber network.
4. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by "usual plastic shaping processes" and what processes are encompassed.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 9-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Iwase et al. (**US 4,882,227**).

3. Iwase et al. disclose a conductive resin composition and molded product using the same. Prior art discloses the conductive resin is comprised of a thermoplastic polymer and a conductive filler material further comprising a low-melting point metal compound and electric conductive fibers (**abstract**). Regarding the low-melting point metal compound, prior art discloses the material is a lead/tin solder base (**col. 2, lines 12+**). As evidenced by the Naval Welding Materials Handbook, lead/tin solders have a melting temperature of 361°F, which when converted is about 183°C (**p. 1-29+**).

Furthermore, Examiner considers these temperatures to be inherent to the disclosure by Iwase. The conductive filler material is a metal fiber comprising copper, stainless steel, aluminum and the like (**col. 2, lines 4+**). Furthermore, prior art discloses the diameter of the conductive fiber and resin material is about 5 to 100 microns (**col. 2, lines 9+**) and the length is of about 5 to 8 mm (**col. 5, lines 19+**). Additionally, the conductive fiber materials are present from about 0.5 to 80 wt% (**col. 3, line 55**) and as evidenced by Example 2, are present in 60 wt% of the composition (**col. 7, lines 49-50**). Furthermore, prior art discloses in Example 2 the total weight measured by parts by weight of the conductive fibers and low-melting point metal as equaling 49 parts by weight. The total parts by weight of the composition is 72 parts by weight and dividing sum of the conductive fibers and low-melting point metal over the total parts by weight yields a total of about 68.1 wt% (**Table 2**). The conductive filler material and resin are simultaneously injection molded to produce a molded product (**Example 2; col. 7, lines**

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38+). The thermoplastic resin comprises polypropylene, polystyrene, and the like (**col. 3, lines 49+**). Concerning the specific volume resistivity, prior art discloses an embodiment (**Example 2**) containing all the elements claimed by Applicants with a volume resistivity of about $3.0 \times 10^{-3} \Omega\text{-cm}$ or less (**Table 2**). Regarding the formation of a fiber network, Examiner takes the position that the formation of said network is inherent to the disclosure as the fibers are surrounded by a polymer matrix and after processing would result in the metal fibers interposed within the matrix.

4. Claims 9-10 and 12-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al. (**US 4,582,661**).

5. Ito et al. disclose a composition for use in electromagnetic wave shielding materials. The composition comprises of a thermoplastic embedding material, metallic fibers, and a stabilizing material. The thermoplastic material is a vinyl chloride polymer or copolymer and other like thermoplastic polymers (**col. 2, lines 3+**). The metallic fibers are of a copper or copper alloy material and comprise of 30-70 wt% of the total composition (**abstract**). The fibers have a diameter of 20 to 80 microns and a length of 1 to 6 mm (**col. 4, lines 31+**). The volume resistivity of the material after processing is from 0.005 to 0.1 $\Omega\text{-cm}$ (**col. 4, lines 21+**). The metal compound used by prior art are chosen from a group comprising lead-type stabilizers, tin-type stabilizers, and other known complex stabilizer (**col. 3, lines 18+**). Examiner takes the position that the above comprise a metal with an organic compound, which is known in the art as an organometallic compound and would be considered equivalent to the broad definition

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claimed by Applicants. Furthermore, as evidenced by Hawley's Condensed Chemical Dictionary, the melting point of dibutyltin maleate, a metal compound disclosed by prior art, is 110°C. Examiner considers the above inherent to the disclosure by Ito.

Regarding the processability of the above composition, the composition is injection molded to create electronic parts (**col. 5, lines 23+**). Regarding the formation of a fiber network, Examiner takes the position that the formation of said network is inherent to the disclosure as the fibers are surrounded by a polymer matrix and after processing would result in the metal fibers interposed within the matrix.

6. Claims 9-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Katsumata et al. (**US 5,554,678**).

7. Katsumata et al. disclose an electroconductive resin material comprising a low-melting point metal compound, electroconductive fibers and/or particles, and a thermoplastic resin (**abstract**). The thermoplastic resin comprises polystyrene, ABS, PET, and other like materials (**col. 2, lines 37+**). The low-melting point metal compound is comprised of tin and has a melting point of 100°C to 250°C (**col. 2, lines 3+**). The metal conductive fiber is comprised of copper and other conductive metals and has a diameter of 5 to 100 microns with a length less than 10 mm (**col. 1, lines 53+**). The filler material further comprises a carbon fiber material or carbon black material (**col. 4, lines 3+**). Examiner takes the position the carbonaceous material (i.e. carbon fiber and carbon black) is a known conductive material in the art. Concerning the copper fibers, prior art discloses the fibers comprise 0.5 to 30 wt% of the total

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composition (**col. 1, lines 62+**). The carbonaceous material is from about 0.5 to 50 wt% (**col. 2, lines 30+ for Carbon Fiber; col. 4, lines 8+ for Carbon Black**). Examiner takes the position that the sum of the conductive materials (i.e. the copper fibers and carbonaceous material) will span from 1 to 80 wt% of the total composition and would encompass the range claimed by Applicants. Furthermore, as shown by prior art, the total composition of the metal fiber, low melting point metal, and vapor-phase grown carbon fibers has a total of 60 wt% (**Table 1; nos. 6-8**). The volume resistivity of the composition is about $6 \times 10^{-4} \Omega\text{-cm}$ for moldable compositions (**Table 2**). Regarding the formation of a fiber network, Examiner takes the position that the formation of said network is inherent to the disclosure as the fibers are surrounded by a polymer matrix and after processing would result in the metal fibers interposed within the matrix.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakakibara (EP0942439) discloses an electroconductive resin but only meets the lower limit the weight percentage of the filler. Tanigaki et al. (US 6,274,070) disclose an electroconductive resin material and method of producing said material but fail to meet the lower limit of the weight percentage of the filler. The Japanese patent (JP 03-138808) fails to meet the lower limit as well. Examiner notes that the above references are considered to be cumulative to the above rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PRASHANT J. KHATRI whose telephone number is

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(571)270-3470. The examiner can normally be reached on M-F 8:00 A.M.-5:00 P.M.
(First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PRASHANT J KHATRI
Examiner
Art Unit 1794

/Callie E. Shosho/

Supervisory Patent Examiner, Art Unit 1794